

Ambient Air Monitoring Report

***National Industries, Inc. Reclamation Area Site
Park Hills, Missouri***

***Prepared for
The Doe Run Company***

September 2012

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Ambient Air Monitoring Report

***National Industries, Inc. Reclamation Area Site
Park Hills, Missouri***

***Prepared for
The Doe Run Company***

September 2012



***1001 Diamond Ridge Suite 1100
Jefferson City, MO 65109
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December 20, 2012

Mr. Mark Nations
The Doe Run Company
P.O. Box 1633
Desloge, Missouri 63601

Re: Ambient Air Monitoring Report – National Site

Dear Mr. Nations:

Please find attached the September 2012 “*Ambient Air Monitoring Report*” for The Doe Run Company at the National Industries, Inc. Reclamation Area Sites, located near Park Hills, Missouri.

This report will include the following:

- **Glossary of Terms** – Listing of the abbreviations used for each parameter and unit.
- **Ambient Air Quality Standards** – Lists the maximum allowable concentrations for the measured parameters.
- **TSP, Lead & PM₁₀ Particulate Summaries** – Includes the averages of each monitored parameter, which relates to the federal standards.
- **Particulate and Lead Analysis Spreadsheets.**
- **Lab Results (lead & cadmium)** – Lab reports from Inovatia Laboratories, LLC.
- **Meteorological Data Printouts** – This supplies printouts of each parameter.

Barr Engineering Company offers this report as an independent laboratory. This includes the weighing of filters, obtaining lead and cadmium analysis, compiling the data, and preparing the report. No interpretation of the data or analysis of the results is implied or intended. Should you have any questions regarding this report, please call.

Respectfully,



Richard J. Campbell, PE
Chemical Engineer
Senior Environmental Consultant

c: Kathy Rangen
Jason Gunter
Ty Morris
Kevin Lombardozzi

GLOSSARY OF TERMS

mg/m^3	Micrograms per Cubic Meter
mph	Miles per Hour
Wind Direction	Degrees from True North
TSP	Total Suspended Particulate
PM_{10}	Particulate Matter - 10 Microns or Less
mmHg	Millimeters of Mercury

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

PM_{10} – Particulate Matter	24-Hour*	Annual Maximum	$150 \text{ mg}/\text{m}^3$
Lead	Calendar Quarter	Arithmetic Mean	$1.5 \text{ mg}/\text{m}^3$
Lead	Rolling 3-Month Average	Arithmetic Mean	$0.15 \text{ mg}/\text{m}^3$

TSP (Total Suspended Particulate) – There are no Federal Standards that apply solely for TSP.

*This standard must be exceeded more than once a year to constitute a violation.



TSP and Lead Concentration Summary

National
Park Hills, Missouri

2012

Date	TSP Big River #4 ($\mu\text{g}/\text{m}^3$)	TSP Ozark #1 ($\mu\text{g}/\text{m}^3$)	TSP Soccer #2 ($\mu\text{g}/\text{m}^3$)	TSP Water Plant #3 ($\mu\text{g}/\text{m}^3$)	LEAD Big River #4 ($\mu\text{g}/\text{m}^3$)	LEAD Ozark #1 ($\mu\text{g}/\text{m}^3$)	LEAD Soccer #2 ($\mu\text{g}/\text{m}^3$)	LEAD Water Plant #3 ($\mu\text{g}/\text{m}^3$)
9/4/12	34	31	35	30	0.013	0.000	0.012	0.008
9/5/12	37	47	38	32	0.048	0.013	0.027	0.010
9/6/12	33	22	42	27	0.015	0.000	0.075	0.011
9/7/12	20	22	25	17	0.000	0.000	0.007	0.000
9/10/12	28	19	19	19	0.032	0.007	0.011	0.009
9/11/12	41	23	31	19	0.049	0.000	0.028	0.008
9/12/12	33	27	45	27	0.017	0.009	0.061	0.019
9/13/12	37	24	33	33	0.010	0.008	0.014	0.011
9/14/12	38	18	24	19	0.012	0.000	0.012	0.006
9/17/12	19	27	18	22	0.013	0.011	0.006	0.022
9/18/12	31	15	21	11	0.048	0.000	0.012	0.017
9/19/12	22	21	27	17	0.010	0.012	0.030	0.008
9/20/12	68	36	36	36	0.071	0.029	0.020	0.038
9/21/12	32	43	INVALID	31	0.011	0.019	INVALID	0.012
9/24/12	29	32	36	26	0.016	0.009	0.032	0.009
9/25/12	32	27	28	29	0.016	0.012	0.013	0.018
9/26/12	11	14	16	13	0.006	0.000	0.011	0.000
9/27/12	26	21	23	26	0.008	0.000	0.009	0.000
9/28/12	27	27	31	25	0.038	0.025	0.035	0.022
Monthly Average	31	26	29	24	0.023	0.008	0.023	0.012
Aug 2012					0.027	0.010	0.036	0.037
Jul 2012					0.035	0.013	0.039	0.034
Rolling 3-month Average					0.03	0.01	0.03	0.03
					3-month Average Lead NAAQS $\mu\text{g}/\text{m}^3$			
								0.15

Please see the particulate analysis sheets for explanations of missing or invalid data.

Note: A summary of the Big River #4 sampler data is also included, because it was part of the QA plan.



Particulate Summary

National Park Hills, Missouri

2012

Date	PM ₁₀ Big River #4 ($\mu\text{g}/\text{m}^3$)	PM ₁₀ Ozark #1 ($\mu\text{g}/\text{m}^3$)	PM ₁₀ Soccer #2 ($\mu\text{g}/\text{m}^3$)	PM ₁₀ Water Plant #3 ($\mu\text{g}/\text{m}^3$)	PM ₁₀ NAAQS ($\mu\text{g}/\text{m}^3$)
6-Sep	21	18	20	18	150
9-Sep	7	7	7	9	150
12-Sep	21	16	17	16	150
15-Sep	12	11	11	12	150
18-Sep	10	9	9	6	150
21-Sep	INVALID	14	14	15	150
24-Sep	19	18	18	19	150
27-Sep	15	13	14	16	150
30-Sep	21	20	20	21	150
Monthly Average	16	14	14	15	

Please see the particulate analysis sheets for explanations of missing or invalid data.

Note: A summary of the Big River #4 sampler data is also included, because it was part of the QA plan.

Particulate and Lead Analysis



TSP and Lead Analysis

The Doe Run Company

SAMPLER ID P4557

Big River Site #4- Primary

Sample Date 2012	Filter ID	TSP Filter Net Wt. g	Lead Total Wt. μg				Ratio P_f/P_a	Q _a m ³ /min	Q _{std} m ³ /min	Elapsed Time hr	Sample		
				T _{av} C	P _{av} mmHg	P _f mmHg					Volume V _{std} m ³	Mass Concentrations TSP μg/m ³	Lead μg/m ³
9/4/2012	8611209	0.0586	23	26	741.5	36.3	0.951	1.248	1.212	23.68	1721	34	0.013
9/5/2012	8614000	0.0641	83	26	740.3	36.3	0.951	1.247	1.211	23.72	1724	37	0.048
9/6/2012	8613990	0.0565	27	24	742.5	36.0	0.952	1.243	1.220	23.65	1731	33	0.015
9/7/2012	8613982	0.0355	< 10	23	740.0	35.9	0.951	1.242	1.217	23.71	1731	20	0.000
9/10/2012	8613972	0.0478	55	18	748.1	35.3	0.953	1.234	1.245	23.19	1732	28	0.032
9/11/2012	8613962	0.0724	87	19	747.6	35.5	0.953	1.237	1.240	23.69	1763	41	0.049
9/12/2012	8613953	0.0579	29	20	748.1	35.6	0.952	1.239	1.239	23.65	1758	33	0.017
9/13/2012	8613941	0.0646	18	20	749.3	35.6	0.953	1.239	1.241	23.71	1765	37	0.010
9/14/2012	8613934	0.0672	21	15	751.5	35.0	0.953	1.231	1.257	23.45	1769	38	0.012
9/17/2012	8613924	0.0335	22	20	741.2	35.6	0.952	1.238	1.227	23.70	1744	19	0.013
9/18/2012	8613916	0.0538	85	14	744.1	34.8	0.953	1.228	1.248	23.52	1761	31	0.048
9/19/2012	8613906	0.0385	18	15	746.1	35.0	0.953	1.231	1.247	23.62	1767	22	0.010
9/20/2012	8615097	0.1189	124	19	744.0	35.4	0.952	1.236	1.235	23.49	1741	68	0.071
9/21/2012	8615087	0.0549	20	19	741.5	35.4	0.952	1.236	1.230	23.54	1738	32	0.011
9/24/2012	8615078	0.0524	28	14	747.7	34.8	0.953	1.228	1.255	23.70	1784	29	0.016
9/25/2012	8615068	0.0548	28	25	741.9	36.1	0.951	1.245	1.217	23.70	1730	32	0.016
9/26/2012	8615060	0.0186	10	19	744.8	35.5	0.952	1.237	1.235	23.63	1751	11	0.006
9/27/2012	8615049	0.0454	14	19	747.2	35.4	0.953	1.237	1.240	23.71	1764	26	0.008
9/28/2012	8615040	0.0482	68	16	747.4	35.1	0.953	1.232	1.247	23.74	1777	27	0.038

Data Captured	TSP	Lead
Valid Samples:	19	19
Scheduled Samples:	19	19
Percent Data Captured:	100%	100%

Monthly Average:	31	0.023
Standard Deviation:	12	0.019
Maximum:	68	0.071
Minimum:	11	0.000

NOTES

9/3/2012 - Holiday - No samples scheduled

DEFINITIONS and CALCULATIONS

T_{av} = average temperature in degrees Celcius

P_{av} = average station pressure in millimeters of mercury

P_f = (((Temp in °Kelvin * Temp Slope)+Temp Int.)*1.868

P_f = ((Temp in °Kelvin * 0.0664)+(-0.4213))*1.868

P_f/P_a = pressure ratio of P_f and P_{av} = 1 - Pf/P_{av}

Q_a = look up table volumetric flow rate

Q_{std} = total sample volumetric flow rate corrected to standard conditions

V_{std} = total sample volume corrected to standard conditions

TSP = mass concentration in μg/std m³

Lead = mass concentration in μg/std m³



TSP and Lead Analysis

The Doe Run Company

SAMPLER ID P2939										National Site #1 Ozark Insulation										
Sample Date 2012	Filter ID	TSP Net Wt. g	Lead Total Wt. μg	T _{av} C	P _{av} mmHg	P _f mmHg	Ratio P _f /P _a	Q _a m ³ /min	Q _{std} m ³ /min	Elapsed Time hr	Sample Volume V _{std} m ³	Mass Concentrations TSP μg/m ³	Lead μg/m ³							
9/4/2012	8611204	0.0535	< 10	26	741.5	36.3	0.951	1.244	1.208	23.59	1709	31	0.000							
9/5/2012	8613995	0.0808	23	26	740.3	36.3	0.951	1.243	1.207	23.53	1704	47	0.013							
9/6/2012	8613985	0.0385	< 10	24	742.5	36.0	0.952	1.239	1.216	23.42	1709	22	0.000							
9/7/2012	8613983	0.0380	< 10	23	740.0	35.9	0.951	1.238	1.213	23.44	1706	22	0.000							
9/10/2012	8613975	0.0330	13	18	748.1	35.3	0.953	1.230	1.241	23.58	1756	19	0.007							
9/11/2012	8613957	0.0398	< 10	19	747.6	35.5	0.953	1.233	1.236	23.67	1755	23	0.000							
9/12/2012	8613948	0.0473	15	20	748.1	35.6	0.952	1.234	1.235	23.61	1749	27	0.009							
9/13/2012	8613938	0.0413	13	20	749.3	35.6	0.953	1.234	1.236	23.33	1731	24	0.008							
9/14/2012	8613929	0.0321	< 10	15	751.5	35.0	0.953	1.227	1.253	23.62	1776	18	0.000							
9/17/2012	8613919	0.0463	19	20	741.2	35.6	0.952	1.234	1.222	23.60	1731	27	0.011							
9/18/2012	8613917	0.0259	< 10	14	744.1	34.8	0.953	1.224	1.244	23.59	1761	15	0.000							
9/19/2012	8613901	0.0372	21	15	746.1	35.0	0.953	1.227	1.243	23.64	1763	21	0.012							
9/20/2012	8615098	0.0631	50	19	744.0	35.4	0.952	1.232	1.231	23.64	1746	36	0.029							
9/21/2012	8615089	0.0749	32	19	741.5	35.4	0.952	1.232	1.226	23.50	1729	43	0.019							
9/24/2012	8615080	0.0564	15	14	747.7	34.8	0.953	1.224	1.251	23.61	1772	32	0.009							
9/25/2012	8615063	0.0457	21	25	741.9	36.1	0.951	1.241	1.213	23.63	1719	27	0.012							
9/26/2012	8615061	0.0235	< 10	19	744.8	35.5	0.952	1.233	1.231	23.54	1738	14	0.000							
9/27/2012	8615044	0.0364	< 10	19	747.2	35.4	0.953	1.233	1.236	23.61	1750	21	0.000							
9/28/2012	8615035	0.0469	44	16	747.4	35.1	0.953	1.228	1.243	23.51	1754	27	0.025							
Data Captured			TSP	Lead																
Valid Samples:			19	19																
Scheduled Samples:			19	19																
Percent Data Captured:			100%	100%																
Monthly Average: 26 0.008																				
Standard Deviation: 9 0.009																				
Maximum: 47 0.029																				
Minimum: 14 0.000																				
NOTES																				
9/3/2012 - Holiday - No samples scheduled																				
DEFINITIONS and CALCULATIONS																				
T _{av} = average temperature in degrees Celcius																				
P _{av} = average station pressure in millimeters of mercury																				
P _f = (((Temp in °Kelvin * Temp Slope))+Temp Int.)*1.868																				
P _f = ((Temp in °Kelvin * 0.0664)+(-0.4213))*1.868																				
P _f /P _a = pressure ratio of P _f and P _{av} = 1 - P _f /P _{av}																				
Q _a = look up table volumetric flow rate																				
Q _{std} = total sample volumetric flow rate corrected to standard conditions																				
V _{std} = total sample volume corrected to standard conditions																				
TSP = mass concentration in μg/std m ³																				
Lead = mass concentration in μg/std m ³																				



TSP and Lead Analysis

The Doe Run Company

SAMPLER ID P4474										National Site #2 - Soccer Field							
Sample Date	Filter ID	TSP Filter Net Wt.	Lead Total Wt.	T _{av}	P _{av}	P _f	Ratio P _f /P _a	Q _a	Q _{std}	Elapsed Time	Sample Volume V _{std}	Mass Concentrations TSP	Lead				
2012	ID	g	μg	C	mmHg	mmHg		m ³ /min	m ³ /min	hr	m ³	μg/m ³	μg/m ³				
9/4/2012	8611205	0.0591	20	26	741.5	36.3	0.951	1.230	1.194	23.77	1702	35	0.012				
9/5/2012	8613996	0.0651	46	26	740.3	36.3	0.951	1.229	1.193	23.76	1701	38	0.027				
9/6/2012	8613986	0.0714	127	24	742.5	36.0	0.952	1.225	1.203	23.44	1691	42	0.075				
9/7/2012	8613984	0.0422	13	23	740.0	35.9	0.951	1.225	1.199	23.77	1710	25	0.007				
9/10/2012	8613974	0.0327	20	18	748.1	35.3	0.953	1.216	1.227	23.73	1746	19	0.011				
9/11/2012	8613958	0.0544	50	19	747.6	35.5	0.953	1.219	1.222	23.81	1745	31	0.028				
9/12/2012	8613949	0.0785	105	20	748.1	35.6	0.952	1.220	1.221	23.67	1733	45	0.061				
9/13/2012	8613939	0.0577	24	20	749.3	35.6	0.953	1.220	1.222	23.51	1724	33	0.014				
9/14/2012	8613930	0.0428	21	15	751.5	35.0	0.953	1.213	1.239	23.72	1763	24	0.012				
9/17/2012	8613920	0.0305	11	20	741.2	35.6	0.952	1.220	1.208	23.80	1726	18	0.006				
9/18/2012	8613918	0.0375	21	14	744.1	34.8	0.953	1.210	1.229	24.05	1774	21	0.012				
9/19/2012	8613902	0.0464	52	15	746.1	35.0	0.953	1.212	1.229	23.73	1750	27	0.030				
9/20/2012	8615099	0.0625	35	19	744.0	35.4	0.952	1.218	1.217	23.60	1723	36	0.020				
9/21/2012	8615090	0.0054	< 10	19	741.5	35.4	0.952	1.218	1.212	0.07	5	INVALID	INVALID				
9/24/2012	8615081	0.0629	57	14	747.7	34.8	0.953	1.210	1.236	23.82	1766	36	0.032				
9/25/2012	8615064	0.0477	22	25	741.9	36.1	0.951	1.227	1.199	23.56	1695	28	0.013				
9/26/2012	8615062	0.0279	18	19	744.8	35.5	0.952	1.219	1.217	23.46	1713	16	0.011				
9/27/2012	8615045	0.0404	16	19	747.2	35.4	0.953	1.218	1.221	23.56	1726	23	0.009				
9/28/2012	8615036	0.0542	61	16	747.4	35.1	0.953	1.214	1.229	23.62	1742	31	0.035				
Data Captured			TSP	Lead													
Valid Samples:	18	18											Monthly Average: 29 0.023				
Scheduled Samples:	19	19											Standard Deviation: 8 0.019				
Percent Data Captured:	95%	95%											Maximum: 45 0.075				
NOTES																	
9/3/2012 - Holiday - No samples scheduled																	
9/21/2012 - INVALID - Mechanical Failure																	
DEFINITIONS and CALCULATIONS																	
T _{av} = average temperature in degrees Celcius																	
P _{av} = average station pressure in millimeters of mercury																	
P _f = (((Temp in °Kelvin * Temp Slope))+Temp Int.))*1.868																	
P _f = ((Temp in °Kelvin * 0.0664)+(-0.4213))*1.868																	
P _f /P _a = pressure ratio of P _f and P _{av} = 1 - P _f /P _{av}																	
Q _a = look up table volumetric flow rate																	
Q _{std} = total sample volumetric flow rate corrected to standard conditions																	
V _{std} = total sample volume corrected to standard conditions																	
TSP = mass concentration in μg/std m ³																	
Lead = mass concentration in μg/std m ³																	



TSP and Lead Analysis

The Doe Run Company

SAMPLER ID P4475

National Site Water Plant #3

Sample Date	Filter ID	TSP Filter Net Wt.	Lead Total Wt.	T_{av}	P_{av}	P_f	Ratio P_f/P_{av}	Q_a	Q_{std}	Elapsed Time hr	Sample Volume V_{std}	Mass Concentrations TSP	Lead
		g	μg	C	mmHg	mmHg		m^3/min	m^3/min		m^3	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
9/4/2012	8611207	0.0511	13	26	741.5	36.3	0.951	1.234	1.198	23.65	1700	30	0.008
9/5/2012	8613998	0.0541	17	26	740.3	36.3	0.951	1.233	1.198	23.55	1692	32	0.010
9/6/2012	8613988	0.0456	19	24	742.5	36.0	0.952	1.230	1.207	23.66	1713	27	0.011
9/7/2012	8613980	0.0291	< 10	23	740.0	35.9	0.951	1.229	1.204	23.71	1712	17	0.000
9/10/2012	8613970	0.0334	15	18	748.1	35.3	0.953	1.221	1.231	23.38	1728	19	0.009
9/11/2012	8613960	0.0326	14	19	747.6	35.5	0.953	1.224	1.227	23.70	1744	19	0.008
9/12/2012	8613951	0.0464	32	20	748.1	35.6	0.952	1.225	1.226	23.56	1732	27	0.019
9/13/2012	8613943	0.0580	19	20	749.3	35.6	0.953	1.225	1.227	23.62	1740	33	0.011
9/14/2012	8613932	0.0340	10	15	751.5	35.0	0.953	1.217	1.243	23.78	1774	19	0.006
9/17/2012	8613922	0.0374	37	20	741.2	35.6	0.952	1.225	1.213	23.68	1724	22	0.022
9/18/2012	8613914	0.0199	29	14	744.1	34.8	0.953	1.214	1.234	23.68	1753	11	0.017
9/19/2012	8613904	0.0290	13	15	746.1	35.0	0.953	1.217	1.233	23.64	1749	17	0.008
9/20/2012	8615095	0.0625	66	19	744.0	35.4	0.952	1.223	1.222	23.50	1723	36	0.038
9/21/2012	8615085	0.0532	21	19	741.5	35.4	0.952	1.223	1.217	23.15	1690	31	0.012
9/24/2012	8615076	0.0465	16	14	747.7	34.8	0.953	1.214	1.240	23.71	1765	26	0.009
9/25/2012	8615066	0.0502	31	25	741.9	36.1	0.951	1.231	1.203	23.78	1717	29	0.018
9/26/2012	8615058	0.0233	< 10	19	744.8	35.5	0.952	1.224	1.222	23.64	1733	13	0.000
9/27/2012	8615047	0.0447	< 10	19	747.2	35.4	0.953	1.223	1.226	23.64	1739	26	0.000
9/28/2012	8615038	0.0445	38	16	747.4	35.1	0.953	1.218	1.234	23.73	1757	25	0.022

Data Captured	TSP	Lead
Valid Samples:	19	19
Scheduled Samples:	19	19
Percent Data Captured:	100%	100%

Monthly Average:	24	0.012
Standard Deviation:	7	0.009
Maximum:	36	0.038
Minimum:	11	0.000

NOTES

9/3/2012 - Holiday - No samples scheduled

DEFINITIONS and CALCULATIONS

T_{av} = average temperature in degrees Celcius

P_{av} = average station pressure in millimeters of mercury

P_f = (((Temp in °Kelvin * Temp Slope)+Temp Int.))*1.868

P_f = ((Temp in °Kelvin * 0.0664)+(-0.4213))*1.868

P_f/P_{av} = pressure ratio of P_f and P_{av} = $1 - P_f/P_{av}$

Q_a = look up table volumetric flow rate

Q_{std} = total sample volumetric flow rate corrected to standard conditions

V_{std} = total sample volume corrected to standard conditions

TSP = mass concentration in $\mu\text{g}/\text{std m}^3$

Lead = mass concentration in $\mu\text{g}/\text{std m}^3$



TSP and Lead Analysis

The Doe Run Company

SAMPLER ID P6609

Big River Site #4 - QA

Sample Date 2012	Filter ID	TSP Filter Net Wt. g	Lead Total Wt. μg	T_{av} C	P_{av} mmHg	P_f mmHg	Ratio P_o/P_a	Q_a m^3/min	Q_{std} m^3/min	Elapsed Time hr	Sample Volume V_{std} m^3	Mass Concentrations TSP $\mu\text{g}/\text{m}^3$	Lead $\mu\text{g}/\text{m}^3$
9/4/2012	8611210	0.0609	22	26	741.5	36.3	0.951	1.239	1.203	23.57	1701	36	0.013
9/6/2012	8613991	0.0590	28	24	742.5	36.0	0.952	1.235	1.212	23.62	1718	34	0.017
9/11/2012	8613973	0.0725	82	19	747.6	35.5	0.953	1.229	1.231	23.62	1745	42	0.047
9/13/2012	8613940	0.0656	18	20	749.3	35.6	0.953	1.230	1.232	23.69	1751	37	0.010
9/18/2012	8613925	0.0554	82	14	744.1	34.8	0.953	1.219	1.239	23.58	1753	32	0.047
9/20/2012	8615100	0.1123	135	19	744.0	35.4	0.952	1.227	1.226	23.49	1729	65	0.078
9/25/2012	8615079	0.0574	30	25	741.9	36.1	0.951	1.237	1.209	23.79	1725	33	0.017
9/27/2012	8615050	0.0440	14	19	747.2	35.4	0.953	1.228	1.231	23.63	1745	25	0.008

Valid Samples: 8 8

Scheduled Samples: 8 8

Percent Data Captured: 100% 100%

Monthly Average: 38 0.030

Standard Deviation: 12 0.025

Maximum: 65 0.078

Minimum: 25 0.008

NOTES

DEFINITIONS and CALCULATIONS

T_{av} = average temperature in degrees Celcius

Q_a = look up table volumetric flow rate

P_{av} = average station pressure in millimeters of mercury

Q_{std} = total sample volumetric flow rate corrected to standard conditions

P_f = (((Temp in °Kelvin * Temp Slope))+Temp Int.)*1.868

V_{std} = total sample volume corrected to standard conditions

P_f = ((Temp in °Kelvin * 0.0664)+(-0.4213))*1.868

TSP = mass concentration in $\mu\text{g}/\text{std m}^3$

P_o/P_a = pressure ratio of P_f and P_{av} = $1 - P_f/P_{av}$

Lead = mass concentration in $\mu\text{g}/\text{std m}^3$



PM₁₀ Analysis

The Doe Run Company

Big River Site #4- Primary																					
Sampler ID P2952																					
Sample Date 2012	Filter ID	PM10 Filter Net Wt. g	Data Collected							Elapsed Time hr	Sample Volume V_{std} m^3	Mass Conc. PM ₁₀ $\mu g/m^3$									
			T _{av} C	P _{av} mmHg	P _f mmHg	Ratio P_o/P_a	Q _a m^3/min	Q _{std} m^3/min													
9/6/2012	264045	0.0334	24	742.5	36.0	0.952	1.149	1.127	23.69	1602	21										
9/9/2012	264034	0.0117	17	745.9	35.1	0.953	1.138	1.149	23.67	1632	7										
9/12/2012	264025	0.0344	20	748.1	35.6	0.952	1.144	1.144	23.61	1620	21										
9/15/2012	264015	0.0195	16	749.8	35.0	0.953	1.137	1.158	23.63	1642	12										
9/18/2012	264007	0.0160	14	744.1	34.8	0.953	1.134	1.153	23.66	1636	10										
9/21/2012	280997	0.0253	19	741.5	35.4	0.952	1.141	1.136	4.55	310	INVALID										
9/24/2012	280987	0.0308	14	747.7	34.8	0.953	1.134	1.159	23.92	1663	19										
9/27/2012	280977	0.0237	19	747.2	35.4	0.953	1.142	1.145	23.66	1625	15										
9/30/2012	280969	0.0338	15	742.0	34.9	0.953	1.136	1.147	23.63	1626	21										
Valid Samples: 8			Scheduled Samples: 9			Percent Data Captured: 89%			Monthly Average: 16												
									Standard Deviation: 6												
									Maximum: 21												
									Minimum: 7												
NOTES 9/3/2012 - Holiday - No samples scheduled 9/21/2012 - INVALID - Mechanical Failure																					
DEFINITIONS and CALCULATIONS																					
T_{av} = average temperature in degrees Celcius																					
P_{av} = average station pressure in millimeters of mercury																					
$P_f = ((Temp \text{ in } {}^{\circ}\text{K} * Temp \text{ Slope}) + Temp \text{ Int.}) * 1.868$																					
$P_f = ((Temp \text{ in } {}^{\circ}\text{K} * 0.0664) + (-0.4213)) * 1.868$																					
$P_o/P_a = \text{pressure ratio of } P_f \text{ and } P_{av} = 1 - P_f/P_{av}$																					
$Q_a = \text{look up table volumetric flow rate}$																					
$Q_{std} = \text{sample volumetric flow rate corrected to standard conditions}$																					
$V_{std} = \text{sample volume corrected to standard conditions}$																					



PM₁₀ Analysis

The Doe Run Company

Sampler ID P2950										National Site #1 Ozark Insulation		
Sample Date	Filter ID	PM10 Filter Net Wt.	T _{av}	P _{av}	P _f	Ratio	Q _a	Q _{std}	Elapsed Time	Sample Volume V _{std}	Mass Conc. PM ₁₀	
2012	ID	g	C	mmHg	mmHg	P _o /P _a	m ³ /min	m ³ /min	hr	m ³	µg/m ³	
9/6/2012	264050	0.0282	24	742.5	36.0	0.952	1.146	1.125	23.68	1598	18	
9/9/2012	264033	0.0115	17	745.9	35.1	0.953	1.136	1.147	23.72	1632	7	
9/12/2012	264023	0.0264	20	748.1	35.6	0.952	1.142	1.142	23.70	1624	16	
9/15/2012	264014	0.0186	16	749.8	35.0	0.953	1.135	1.155	23.69	1642	11	
9/18/2012	264012	0.0149	14	744.1	34.8	0.953	1.132	1.150	23.76	1640	9	
9/21/2012	264002	0.0229	19	741.5	35.4	0.952	1.139	1.134	23.84	1622	14	
9/24/2012	280985	0.0288	14	747.7	34.8	0.953	1.132	1.156	23.72	1646	18	
9/27/2012	280976	0.0214	19	747.2	35.4	0.953	1.140	1.143	23.70	1625	13	
9/30/2012	280974	0.0329	15	742.0	34.9	0.953	1.133	1.144	23.74	1630	20	
Valid Samples:	9											
Scheduled Samples:	9											
Percent Data Captured:	100%											
Monthly Average:	14											
Standard Deviation:	4											
Maximum:	20											
Minimum:	7											

NOTES
9/3/2012 - Holiday - No samples scheduled

DEFINITIONS and CALCULATIONS

T_{av} = average temperature in degrees Celcius
P_{av} = average station pressure in millimeters of mercury
P_f = ((Temp in °Kelvin * Temp Slope)+Temp Int.)*1.868
P_f = ((Temp in °Kelvin * 0.0664)+(-0.4213))*1.868

P_o/P_a = pressure ratio of P_f and P_{av} = 1 - P_f/P_{av}
Q_a = look up table volumetric flow rate
Q_{std} = sample volumetric flow rate corrected to standard conditions
V_{std} = sample volume corrected to standard conditions



PM₁₀ Analysis

The Doe Run Company

National Site #2 - Soccer Field												
Sampler ID P2949												
Sample Date	Filter ID	PM10 Filter Net Wt.	T _{av} C	P _{av} mmHg	P _f mmHg	Ratio P _o /P _a	Q _a m ³ /min	Q _{std} m ³ /min	Elapsed Time hr	Sample Volume V _{std} m ³	Mass Conc. PM ₁₀ µg/m ³	
9/6/2012	264049	0.0325	24	742.5	36.0	0.952	1.143	1.122	23.77	1600	20	
9/9/2012	264032	0.0108	17	745.9	35.1	0.953	1.133	1.144	23.71	1627	7	
9/12/2012	264022	0.0276	20	748.1	35.6	0.952	1.139	1.139	23.73	1621	17	
9/15/2012	264013	0.0179	16	749.8	35.0	0.953	1.132	1.153	23.74	1642	11	
9/18/2012	264011	0.0149	14	744.1	34.8	0.953	1.129	1.147	23.74	1634	9	
9/21/2012	264001	0.0224	19	741.5	35.4	0.952	1.136	1.131	24.01	1629	14	
9/24/2012	280984	0.0290	14	747.7	34.8	0.953	1.129	1.153	23.70	1640	18	
9/27/2012	280975	0.0235	19	747.2	35.4	0.953	1.137	1.140	23.75	1624	14	
9/30/2012	280973	0.0321	15	742.0	34.9	0.953	1.130	1.141	23.74	1626	20	
Valid Samples:	9	Scheduled Samples:	9	Percent Data Captured:	100%							
						Monthly Average:	14	Standard Deviation:	5	Maximum:	20	
						Percent Data Captured:	100%	Minimum:	7			
NOTES												
9/3/2012 - Holiday - No samples scheduled												
DEFINITIONS and CALCULATIONS												
						P _o /P _a = pressure ratio of P _f and P _{av} = 1 - P _f /P _{av}						
						Q _a = look up table volumetric flow rate						
						Q _{std} = sample volumetric flow rate corrected to standard conditions						
						V _{std} = sample volume corrected to standard conditions						



PM₁₀ Analysis

The Doe Run Company

Sampler ID P2951								National Site #3 - Water Plant			
Sample Date	Filter ID	PM10 Filter Net Wt.	T _{av} C	P _{av} mmHg	P _f mmHg	Ratio P _o /P _a	Q _a m ³ /min	Q _{std} m ³ /min	Elapsed Time hr	Sample Volume V _{std} m ³	Mass Conc. PM ₁₀ µg/m ³
9/6/2012	264047	0.0291	24	742.5	36.0	0.952	1.150	1.128	23.46	1588	18
9/9/2012	264036	0.0139	17	745.9	35.1	0.953	1.140	1.150	23.48	1621	9
9/12/2012	264027	0.0256	20	748.1	35.6	0.952	1.145	1.146	23.40	1609	16
9/15/2012	264017	0.0202	16	749.8	35.0	0.953	1.138	1.159	23.47	1633	12
9/18/2012	264009	0.0101	14	744.1	34.8	0.953	1.135	1.154	23.48	1625	6
9/21/2012	280999	0.0247	19	741.5	35.4	0.952	1.143	1.137	23.67	1615	15
9/24/2012	280989	0.0303	14	747.7	34.8	0.953	1.135	1.160	23.50	1635	19
9/27/2012	280979	0.0264	19	747.2	35.4	0.953	1.144	1.146	23.43	1612	16
9/30/2012	280971	0.0333	15	742.0	34.9	0.953	1.137	1.148	23.51	1619	21
Valid Samples:	9	Scheduled Samples:	9	Percent Data Captured:	100%	Monthly Average:	15	Standard Deviation:	5	Maximum:	21
											Minimum: 6
NOTES											
9/3/2012 - Holiday - No samples scheduled											
DEFINITIONS and CALCULATIONS											
T_{av} = average temperature in degrees Celcius											
P_{av} = average station pressure in millimeters of mercury											
$P_f = ((Temp \text{ in } ^\circ\text{Kelvin} * \text{Temp Slope}) + \text{Temp Int.}) * 1.868$											
$P_f = ((Temp \text{ in } ^\circ\text{Kelvin} * 0.0664) + (-0.4213)) * 1.868$											
P_o/P_a = pressure ratio of P_f and P_{av} = $1 - P_f/P_{av}$											
Q_a = look up table volumetric flow rate											
Q_{std} = sample volumetric flow rate corrected to standard conditions											
V_{std} = sample volume corrected to standard conditions											

Lab Results (Lead and Cadmium)



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ANALYSIS REPORT

Client Information:

Barr Engineering Company
7390 Ohms Lane
Edina, MN 55439-2330

Chain of Custody No.: 12-0962
Date Received: 09/21/12
Analysis Method: 40 CFR §50
Appendix G

Location**National**

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124685	8611207	09/04/12	#3 East - WTP	13	< 10	10/03/12 - DS
124688	8613998	09/05/12	#3 East - WTP	17	< 10	09/28/12 - DS
124691	8613988	09/06/12	#3 East - WTP	19	< 10	09/28/12 - DS
124694	8613980	09/07/12	#3 East - WTP	< 10	< 10	09/28/12 - DS
124707	8611204	09/04/12	#1 Ozark	< 10	< 10	10/01/12 - DS
124708	8611205	09/04/12	#2 Soccer	20	< 10	10/01/12 - DS
124709	8613995	09/05/12	#1 Ozark	23	< 10	10/01/12 - DS
124710	8613996	09/05/12	#2 Soccer	46	< 10	10/01/12 - DS
124711	8613985	09/06/12	#1 Ozark	< 10	< 10	10/01/12 - DS
124712	8613986	09/06/12	#2 Soccer	127	< 10	10/01/12 - DS
124713	8613983	09/07/12	#1 Ozark	< 10	< 10	10/01/12 - DS
124714	8613984	09/07/12	#2 Soccer	13	< 10	10/01/12 - DS

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ANALYSIS REPORT

Client Information:

Barr Engineering Company
7390 Ohms Lane
Edina, MN 55439-2330

Chain of Custody No.: 12-0984
Date Received: 09/27/12
Analysis Method: 40 CFR §50
Appendix G

Location**National**

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124819	8613970	09/10/12	#3 East - WTP	15	< 10	10/03/12 - DS
124822	8613960	09/11/12	#3 East - WTP	14	< 10	10/03/12 - DS
124825	8613951	09/12/12	#3 East - WTP	32	< 10	10/03/12 - DS
124828	8613943	09/13/12	#3 East - WTP	19	< 10	10/03/12 - DS
124831	8613932	09/14/12	#3 East - WTP	10	< 10	10/03/12 - DS
124847	8613975	09/10/12	#1 Ozark	13	< 10	10/03/12 - DS
124848	8613974	09/10/12	#2 Soccer	20	< 10	10/03/12 - DS
124849	8613957	09/11/12	#1 Ozark	< 10	< 10	10/03/12 - DS
124850	8613958	09/11/12	#2 Soccer	50	< 10	10/03/12 - DS
124851	8613948	09/12/12	#1 Ozark	15	< 10	10/03/12 - DS
124852	8613949	09/12/12	#2 Soccer	105	< 10	10/03/12 - DS
124853	8613938	09/13/12	#1 Ozark	13	< 10	10/03/12 - DS
124854	8613939	09/13/12	#2 Soccer	24	< 10	10/03/12 - DS
124855	8613929	09/14/12	#1 Ozark	< 10	< 10	10/03/12 - DS
124856	8613930	09/14/12	#2 Soccer	21	< 10	10/03/12 - DS

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ANALYSIS REPORT

Client Information:

Barr Engineering Company
7390 Ohms Lane
Edina, MN 55439-2330

Chain of Custody No.: 12-1003
Date Received: 10/05/12
Analysis Method: 40 CFR §50
Appendix G

Location

National

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124903	8613922	09/17/12	#3 East - WTP	37	< 10	10/09/12 - DS
124906	8613914	09/18/12	#3 East - WTP	29	< 10	10/09/12 - DS
124909	8613904	09/19/12	#3 East - WTP	13	< 10	10/09/12 - DS
124912	8615095	09/20/12	#3 East - WTP	66	< 10	10/09/12 - DS
124915	8615085	09/21/12	#3 East - WTP	21	< 10	10/09/12 - DS
124931	8613919	09/17/12	#1 Ozark	19	< 10	10/09/12 - DS
124932	8613920	09/17/12	#2 Soccer	11	< 10	10/09/12 - DS
124933	8613917	09/18/12	#1 Ozark	< 10	< 10	10/09/12 - DS
124934	8613918	09/18/12	#2 Soccer	21	< 10	10/09/12 - DS
124935	8613901	09/19/12	#1 Ozark	21	< 10	10/09/12 - DS
124936	8613902	09/19/12	#2 Soccer	52	< 10	10/09/12 - DS
124937	8615098	09/20/12	#1 Ozark	50	< 10	10/09/12 - DS
124938	8615099	09/20/12	#2 Soccer	35	< 10	10/09/12 - DS
124939	8615089	09/21/12	#1 Ozark	32	< 10	10/09/12 - DS
124940	8615090	09/21/12	#2 Soccer	< 10	< 10	10/09/12 - DS

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ANALYSIS REPORT

Client Information:

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Chain of Custody No.: 12-1018
Date Received: 10/12/12
Analysis Method: 40 CFR §50
Appendix G

Location National

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
125002	8615076	09/24/12	#3 East - WTP	16	< 10	10/17/12 - DS
125005	8615066	09/25/12	#3 East - WTP	31	< 10	10/17/12 - DS
125008	8615058	09/26/12	#3 East - WTP	< 10	< 10	10/17/12 - DS
125011	8615047	09/27/12	#3 East - WTP	< 10	< 10	10/17/12 - DS
125015	8615038	09/28/12	#3 East - WTP	38	< 10	10/17/12 - DS
125031	8615080	09/24/12	#1 Ozark	15	< 10	10/17/12 - DS
125032	8615081	09/24/12	#2 Soccer	57	< 10	10/17/12 - DS
125033	8615063	09/25/12	#1 Ozark	21	< 10	10/17/12 - DS
125034	8615064	09/25/12	#2 Soccer	22	< 10	10/17/12 - DS
125035	8615061	09/26/12	#1 Ozark	< 10	< 10	10/17/12 - DS
125036	8615062	09/26/12	#2 Soccer	18	< 10	10/17/12 - DS
125037	8615044	09/27/12	#1 Ozark	< 10	< 10	10/17/12 - DS
125038	8615045	09/27/12	#2 Soccer	16	< 10	10/17/12 - DS
125039	8615035	09/28/12	#1 Ozark	44	< 10	10/17/12 - DS
125040	8615036	09/28/12	#2 Soccer	61	< 10	10/17/12 - DS

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ANALYSIS REPORT

Client Information:

Barr Engineering Company
7390 Ohms Lane
Edina, MN 55439-2330

Chain of Custody No.: 12-0962
Date Received: 09/21/12
Analysis Method: 40 CFR §50
Appendix G

Location Big River

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124677	8611209	09/04/12	#4 Primary	23	< 10	10/03/12 - DS
124678	8611210	09/04/12	#4 QA	22	< 10	10/03/12 - DS
124679	8614000	09/05/12	#4 Primary	83	< 10	10/03/12 - DS
124680	8613990	09/06/12	#4 Primary	27	< 10	10/03/12 - DS
124681	8613991	09/06/12	#4 QA	28	< 10	10/03/12 - DS
124682	8613982	09/07/12	#4 Primary	< 10	< 10	10/03/12 - DS

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ANALYSIS REPORT

Client Information:

Barr Engineering Company
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Chain of Custody No.: 12-0984
Date Received: 09/27/12
Analysis Method: 40 CFR §50
Appendix G

Location Big River

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124810	8613972	09/10/12	#4 Primary	55	< 10	10/03/12 - DS
124811	8613962	09/11/12	#4 Primary	87	< 10	10/03/12 - DS
124812	8613973	09/11/12	#4 QA	82	< 10	10/03/12 - DS
124813	8613953	09/12/12	#4 Primary	29	< 10	10/03/12 - DS
124814	8613941	09/13/12	#4 Primary	18	< 10	10/03/12 - DS
124815	8613940	09/13/12	#4 QA	18	< 10	10/03/12 - DS
124816	8613934	09/14/12	#4 Primary	21	< 10	10/03/12 - DS

Submitted by: _____


Digitally signed by Jennifer Vandevicht
Date: 2012-10-04 12:31:18-05'00'

10/4/12

Date

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ANALYSIS REPORT

Client Information:

Barr Engineering Company
7390 Ohms Lane
Edina, MN 55439-2330

Chain of Custody No.: 12-1003
Date Received: 10/05/12
Analysis Method: 40 CFR §50
Appendix G

Location Big River

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124894	8613924	09/17/12	#4 Primary	22	< 10	10/09/12 - DS
124895	8613916	09/18/12	#4 Primary	85	< 10	10/09/12 - DS
124896	8613925	09/18/12	#4 QA	82	< 10	10/09/12 - DS
124897	8613906	09/19/12	#4 Primary	18	< 10	10/09/12 - DS
124898	8615097	09/20/12	#4 Primary	124	< 10	10/09/12 - DS
124899	8615100	09/20/12	#4 QA	135	< 10	10/09/12 - DS
124900	8615087	09/21/12	#4 Primary	20	< 10	10/09/12 - DS

Submitted by:

Jennifer Vandelicht
DIN: crn-JenniferVandelicht,
p@Inovatia Laboratories, LLC,
Qa=Quality Assurance,
email:jvandelicht@inovatia.com,
cn:US
Date: 2012.10.10 11:42:39 -05'00'

10/10/12

Date

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ANALYSIS REPORT

Client Information:

Barr Engineering Company
7390 Ohms Lane
Edina, MN 55439-2330

Chain of Custody No.: 12-1018
Date Received: 10/12/12
Analysis Method: 40 CFR §50
Appendix G

Location Big River

Lab No.	Filter ID	Date	Site	µg Pb/Filter	µg Cd/Filter	Date - Analyst
124993	8615078	09/24/12	#4 Primary	28	< 10	10/17/12 - DS
124994	8615068	09/25/12	#4 Primary	28	< 10	10/17/12 - DS
124995	8615079	09/25/12	#4 QA	30	< 10	10/17/12 - DS
124996	8615060	09/26/12	#4 Primary	10	< 10	10/17/12 - DS
124997	8615049	09/27/12	#4 Primary	14	< 10	10/17/12 - DS
124998	8615050	09/27/12	#4 QA	14	< 10	10/17/12 - DS
124999	8615040	09/28/12	#4 Primary	68	< 10	10/17/12 - DS

Submitted by:

Jennifer Vandelicht
Digitally signed by Jennifer
Vandelicht
DN: cn=Jennifer Vandelicht,
o=Inovatia Laboratories, LLC,
ou=Quality Assurance,
email=jvandelicht@inovatia.com,
c=US
Date: 2012.10.18 09:32:46 -05'00'

10/18/12

Date

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Meteorological Data



Meteorological Report
The Doe Run Company
Wind Speed

Site Name: Rivermines

Average Interval: 01 Hour

Units: mph

Sampling Frequency: 01 Second

2012	Hour	24 Hour Avg																								
		Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1-Sep	6.6	7.8	8.3	8.3	7.3	6.8	7.8	8.9	9.8	9.0	9.3	8.0	10.2	9.8	7.1	7.2	7.0	4.8	3.7	5.1	3.5	1.0	1.0	1.8	10.2	6.7
2-Sep	1.4	1.2	0.7	1.1	0.6	1.0	0.7	1.1	1.4	2.0	2.5	2.8	3.2	3.1	2.7	3.2	2.5	3.8	1.5	0.9	0.8	1.6	1.4	2.3	3.8	1.8
3-Sep	2.3	1.3	2.6	3.8	3.7	4.3	4.5	3.9	5.0	5.3	4.9	4.7	6.8	5.8	5.9	6.7	5.0	2.9	0.6	0.5	0.7	0.4	0.4	0.4	6.8	3.4
4-Sep	0.6	0.6	0.2	0.6	0.1	0.2	0.7	0.6	1.9	3.5	2.2	2.6	3.4	3.5	3.4	2.7	3.0	3.2	2.1	0.6	0.2	0.1	0.1	0.0	3.5	1.5
5-Sep	0.0	0.0	0.0	0.3	0.0	1.2	3.7	6.9	4.2	3.0	2.9	5.7	5.3	4.5	4.0	2.1	1.3	0.5	0.3	0.2	0.6	0.0	0.2	0.5	6.9	2.0
6-Sep	0.1	1.2	0.3	0.1	0.6	0.2	0.1	0.0	0.5	2.1	2.6	3.2	2.6	2.2	3.3	6.7	3.5	6.4	4.7	0.4	2.1	1.1	0.7	1.5	6.7	1.9
7-Sep	1.6	1.4	0.3	0.0	0.0	0.0	0.0	1.3	4.7	5.1	6.5	5.9	5.8	6.2	5.3	3.5	6.6	8.5	8.0	6.9	6.3	6.5	5.9	7.0	8.5	4.3
8-Sep	8.4	6.6	5.9	6.3	4.7	4.2	5.4	6.5	8.2	8.8	9.6	8.3	7.0	6.6	6.3	6.8	6.1	3.7	0.3	0.3	0.2	1.0	1.3	0.3	9.6	5.1
9-Sep	0.2	1.3	2.3	0.3	1.1	1.7	1.0	1.9	5.9	5.8	6.3	7.3	6.9	8.0	7.0	6.9	7.1	4.9	1.0	0.2	0.3	0.2	0.2	0.1	8.0	3.2
10-Sep	0.6	1.6	1.5	0.3	0.4	1.1	1.2	0.3	1.1	2.3	3.6	3.1	2.9	3.5	3.3	2.5	2.1	0.7	0.2	0.9	0.9	0.1	0.0	0.0	3.6	1.4
11-Sep	0.1	0.0	0.0	0.1	0.0	0.2	0.1	0.0	3.2	6.6	6.1	5.7	5.6	5.2	5.4	5.5	5.2	3.4	1.0	0.1	0.1	0.1	0.1	0.1	6.6	2.2
12-Sep	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.2	1.5	5.5	7.9	8.4	7.1	6.9	5.7	6.7	6.5	4.8	1.9	1.3	0.5	0.0	0.0	0.2	8.4	2.7
13-Sep	0.7	0.1	0.0	0.0	0.2	0.1	0.0	0.1	1.8	2.2	2.3	3.6	2.2	1.4	2.2	3.0	6.7	3.0	1.1	6.9	5.3	4.5	3.2	3.4	6.9	2.3
14-Sep	2.2	1.4	2.4	4.2	4.6	6.0	3.5	3.0	3.9	4.2	4.5	3.8	4.2	4.8	4.3	4.6	2.1	2.7	0.5	0.0	0.0	0.2	0.0	0.1	6.0	2.8
15-Sep	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.6	4.1	5.2	3.9	1.2	0.0	0.1	0.6	1.5	2.8	2.6	0.8	0.3	0.3	0.4	0.6	0.0	5.2	1.1
16-Sep	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.4	0.2	1.0	3.5	3.9	1.9	1.9	0.8	1.0	0.7	0.3	0.2	0.0	0.0	0.2	0.2	0.1	3.9	0.7
17-Sep	0.0	0.2	0.0	0.1	0.0	0.0	0.4	0.1	0.9	0.5	0.8	1.0	0.9	1.3	1.8	1.1	0.7	0.1	0.3	0.3	0.1	0.2	0.8	7.5	8.4	1.1
18-Sep	9.0	7.0	7.3	5.9	3.0	2.8	4.2	5.9	7.2	9.0	8.8	9.3	8.7	7.4	7.0	6.0	5.8	3.9	0.6	0.1	0.4	0.0	0.3	0.4	9.3	5.0
19-Sep	0.9	1.0	1.3	0.8	0.3	0.4	0.3	0.5	4.6	7.6	7.4	7.6	7.0	6.9	7.2	7.4	7.7	6.6	5.0	4.6	5.6	4.3	4.6	5.0	7.7	4.3
20-Sep	3.0	3.5	3.8	3.9	1.4	1.5	1.8	3.5	2.5	3.3	2.8	3.2	3.0	3.0	2.9	2.2	3.0	0.4	0.5	0.2	0.2	0.3	0.4	0.4	3.9	2.1
21-Sep	0.4	0.0	0.2	0.3	0.1	1.4	5.9	5.1	6.4	7.5	7.7	9.6	10.3	8.8	7.3	7.4	7.1	3.1	1.3	0.3	0.3	1.0	0.8	0.3	10.3	3.9
22-Sep	1.4	0.3	0.1	0.1	0.4	0.3	1.4	1.0	1.2	5.8	7.7	8.2	8.5	8.2	9.0	7.6	6.2	3.3	0.1	0.2	0.0	0.1	0.0	0.0	9.0	3.0
23-Sep	0.1	0.1	0.1	0.1	0.1	0.5	0.7	0.8	0.8	3.2	3.9	4.9	3.6	5.6	4.8	3.8	3.5	0.8	0.2	0.1	0.1	0.3	0.2	0.3	5.6	1.6
24-Sep	0.7	0.7	1.1	0.3	0.1	0.1	0.0	0.4	4.8	7.9	6.7	6.4	5.8	6.7	7.0	6.7	6.8	3.6	1.7	0.6	4.6	5.8	5.2	3.9	7.9	3.6
25-Sep	2.2	4.4	3.8	3.9	2.2	3.9	4.5	2.4	2.3	3.6	5.5	6.0	8.4	6.9	5.8	6.8	9.6	6.8	7.2	5.2	1.6	3.2	4.2	4.2	9.6	4.8
26-Sep	4.6	3.0	1.0	0.7	0.0	0.2	4.3	1.9	3.6	2.0	1.7	1.5	2.6	3.2	2.5	1.5	0.8	2.1	1.4	1.0	0.1	0.5	0.2	0.1	4.6	1.7
27-Sep	1.0	0.9	0.5	0.3	0.4	0.7	0.1	0.3	0.7	2.0	2.7	2.0	2.8	2.8	2.2	1.8	1.5	1.6	1.6	2.0	2.4	1.5	0.2	0.0	2.8	1.3
28-Sep	0.0	0.3	1.6	1.4	3.1	2.9	3.6	1.6	1.8	2.7	2.7	2.6	3.8	3.9	3.6	3.7	1.4	0.1	0.2	0.1	0.0	0.0	0.0	3.9	1.7	
29-Sep	0.2	0.0	0.0	0.1	0.1	0.1	0.5	0.3	0.4	2.2	5.7	5.6	6.1	3.8	4.0	3.8	3.7	0.3	0.3	0.3	0.4	0.5	1.6	1.5	6.1	1.7
30-Sep	1.2	1.9	2.3	1.9	1.8	1.4	1.0	0.6	0.8	1.3	1.0	1.1	4.0	4.1	3.8	2.5	1.6	0.4	0.0	0.3	0.0	0.3	0.1	0.3	4.1	1.4

BARR	Maximum Hour//Monthly Average	10.3
Total Hours In Month	720	2.7
Valid Hours//Percent Data Captured	720	100.0%

Meteorological Report
The Doe Run Company
Wind Direction

Site Name: Rivermines

Average Interval: 01 Hour

Units: Degrees

Sampling Frequency: 01 Second

2012	Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	24 Hour Avg
Day																										
1-Sep	175	183	183	184	186	179	174	181	190	190	197	203	207	205	224	221	219	225	191	180	228	256	253	255	204	
2-Sep	245	243	245	242	248	259	254	268	268	265	272	275	282	276	279	287	277	295	247	227	259	288	289	302	266	
3-Sep	299.	292	310	316	316	325	324	314	326	326	316	324	337	350	8	3	13	2	220	192	188	194	197	229	238	
4-Sep	219	208	194	193	178	210	239	251	19	355	348	27	34	95	110	112	44	82	150	161	200	336	209	209	174	
5-Sep	15	213	187	143	240	153	189	180	176	180	20	26	59	74	106	144	47	220	208	205	192	192	175	180	146	
6-Sep	199	203	167	192	173	177	294	200	345	0	31	46	23	64	39	256	116	152	136	222	228	224	359	142	166	
7-Sep	131	198	20	179	126	178	184	139	193	193	216	226	219	208	202	187	187	184	334	5	352	334	335	329	203	
8-Sep	331	327	323	321	318	320	318	326	333	329	341	333	333	325	326	322	318	316	192	180	208	238	249	245	299	
9-Sep	242	232	241	238	228	163	219	283	351	1	347	338	340	357	1	352	355	2	3	184	180	174	192	181	217	
10-Sep	206	221	212	210	215	214	226	252	65	100	113	186	115	147	124	157	169	180	154	158	147	191	0	0	157	
11-Sep	171	0	213	168	0	163	162	194	183	175	164	170	177	161	164	167	186	172	168	161	141	174	159	176	157	
12-Sep	196	173	195	261	171	174	281	292	183	177	205	194	183	179	183	183	181	175	166	160	163	67	294	177	192	
13-Sep	170	136	54	201	181	210	187	335	174	159	156	152	181	203	155	119	112	158	290	349	359	346	333	336	211	
14-Sep	340	340	338	351	359	352	358	352	356	9	15	19	19	19	12	7	6	8	182	223	221	172	212	171	185	
15-Sep	190	212	180	0	193	183	32	63	89	93	99	45	16	17	41	359	28	99	5	122	25	90	67	58	96	
16-Sep	202	220	174	47	223	9	355	158	115	135	173	174	186	209	242	209	201	189	181	224	182	155	169	125	177	
17-Sep	194	177	352	116	188	183	189	222	277	265	344	285	264	314	291	300	313	189	189	186	201	239	340	336	248	
18-Sep	334	324	327	317	315	316	321	334	339	347	343	329	329	326	317	322	317	324	328	175	189	192	185	200	298	
19-Sep	197	216	224	213	211	185	234	299	195	201	210	205	206	203	207	193	190	196	187	192	193	197	214	216	208	
20-Sep	211	216	224	221	229	216	226	238	259	252	272	278	293	282	286	269	306	288	183	194	187	202	187	216	239	
21-Sep	198	212	180	183	169	170	186	190	188	194	202	205	216	223	229	228	237	256	254	245	224	230	281	214		
22-Sep	310	169	173	182	221	237	243	246	266	305	315	327	329	340	339	334	339	334	185	169	191	199	200	182	256	
23-Sep	148	191	190	188	203	227	238	274	0	351	6	344	345	360	2	358	359	353	168	166	161	194	210	205	218	
24-Sep	219	213	214	188	188	173	209	284	179	175	174	167	168	166	183	181	184	184	183	174	191	205	205	199	192	
25-Sep	207	203	219	220	204	216	219	320	150	131	218	223	205	217	226	212	207	200	193	264	104	337	161	182	210	
26-Sep	217	268	187	259	178	300	287	293	150	216	10	24	208	188	181	284	206	218	198	240	195	193	181	180	202	
27-Sep	209	195	183	201	325	13	41	238	328	12	65	56	59	69	61	76	60	30	26	23	83	28	63	191	110	
28-Sep	0	15	23	28	21	13	10	29	8	15	25	3	8	7	10	1	352	235	188	173	172	190	185	208	80	
29-Sep	215	204	205	210	194	207	216	239	324	4	11	12	360	16	352	359	1	33	179	175	181	209	210	221	181	
30-Sep	216	221	222	216	219	213	208	244	254	255	248	299	337	8	19	24	26	31	179	176	172	187	181	146	179	

 BARR	Total Hours in Month: 720 Valid Hours: 720 Percent Data Captured: 100.0%
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Meteorological Report
The Doe Run Company
 $\Sigma \theta$

Site Name: Rivermines

Average Interval: 01 Hour
 Units: Degrees

2012	Hour																									24 Hour Avg
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-Sep	20.9	21.0	20.4	20.2	20.8	21.7	22.8	22.2	23.0	21.0	20.7	22.7	21.3	22.8	24.2	26.5	24.6	23.5	19.2	21.3	22.4	19.6	25.2	22		
2-Sep	19.1	18.3	14.1	15.8	13.9	20.3	19.9	30.0	33.5	33.9	38.7	40.5	43.5	42.5	45.6	37.6	43.9	36.4	26.7	14.5	23.7	33.5	27.2	31.8	29	
3-Sep	28.9	27.0	24.8	23.3	24.5	20.9	21.0	28.9	22.4	26.1	28.2	26.7	21.4	24.5	24.4	20.9	23.5	18.4	7.3	7.4	6.2	7.1	6.4	12.6	20	
4-Sep	11.9	13.4	3.2	11.5	5.5	7.6	14.5	18.5	26.3	27.3	32.3	49.7	42.2	46.5	29.2	30.2	31.2	28.3	19.3	10.1	1.6	6.7	4.6	3.3	20	
5-Sep	0.2	1.1	0.4	9.6	0.1	16.5	26.2	24.2	26.6	28.4	30.3	31.9	34.6	37.2	35.8	53.2	45.9	12.0	3.0	1.5	7.0	0.2	4.6	4.7	18	
6-Sep	2.5	20.9	25.4	6.1	10.2	2.5	6.0	5.6	16.2	39.7	42.6	33.4	39.5	39.5	28.8	36.5	35.5	39.0	54.0	29.5	22.3	18.2	12.0	16.3	24	
7-Sep	40.5	16.8	15.0	0.6	0.6	3.0	0.9	14.8	26.6	26.6	25.7	29.4	27.3	26.0	25.2	24.9	43.5	33.4	28.2	28.9	21.5	20.9	20.1	20.1	22	
8-Sep	21.3	19.8	22.1	20.0	23.0	19.6	23.3	21.4	21.5	22.1	23.3	29.7	27.7	31.9	28.8	29.2	27.3	22.6	5.0	2.5	6.3	16.6	11.8	8.8	20	
9-Sep	2.7	12.8	16.8	8.5	17.5	36.6	13.7	29.7	22.2	22.3	24.9	27.5	30.1	22.2	22.6	24.4	20.5	18.4	13.0	5.2	4.8	2.1	3.0	2.2	17	
10-Sep	9.7	19.7	19.1	9.1	10.6	13.1	23.3	19.8	34.4	36.6	42.2	67.9	52.0	49.4	43.5	28.1	22.0	10.8	2.6	7.0	11.9	14.3	0.0	0.0	23	
11-Sep	1.1	0.0	0.2	2.4	0.0	3.6	1.9	2.0	19.2	25.5	27.7	30.5	25.9	31.0	28.7	27.7	24.2	20.0	10.8	1.7	5.0	9.4	13.2	4.3	13	
12-Sep	0.5	2.4	3.1	5.9	1.1	4.3	5.2	19.6	15.3	25.3	24.8	23.2	26.4	25.1	24.7	24.3	22.3	20.7	12.3	10.1	11.9	0.0	2.5	9.3	13	
13-Sep	20.3	7.5	0.0	0.5	4.6	3.4	3.6	12.8	27.8	35.4	35.4	31.7	29.8	19.3	18.7	21.5	22.4	20.4	7.8	21.4	20.5	18.1	18.8	21.0	18	
14-Sep	17.6	15.2	17.5	17.8	20.3	19.3	19.9	21.2	21.4	20.5	21.4	25.5	22.9	24.2	22.4	20.3	15.6	17.1	6.4	0.1	0.1	0.9	0.1	0.3	15	
15-Sep	1.6	2.2	1.0	0.0	1.4	1.2	23.3	16.3	29.8	28.6	28.4	21.7	3.3	3.3	13.3	23.1	50.0	38.7	25.1	7.7	17.9	19.5	10.7	0.0	15	
16-Sep	0.5	0.1	4.3	0.0	1.7	0.6	0.3	12.3	7.2	18.7	24.6	21.4	18.8	19.1	22.2	13.7	9.0	5.1	6.8	0.1	0.6	3.0	25.2	12.5	9	
17-Sep	0.2	1.4	0.0	10.0	0.7	0.6	6.0	5.8	23.1	20.6	23.9	24.6	25.4	27.4	35.6	26.4	15.8	0.4	1.3	2.1	5.4	9.7	19.6	20.7	13	
18-Sep	19.8	21.4	21.9	24.0	23.9	23.8	19.6	20.5	21.7	21.0	22.0	24.2	28.9	31.7	31.3	28.7	26.4	20.6	8.6	2.7	6.2	3.9	5.1	5.2	19	
19-Sep	9.4	14.9	17.1	10.2	8.9	6.2	15.2	24.8	25.6	24.0	25.2	25.2	26.5	24.6	23.8	22.6	20.5	19.1	17.6	22.4	22.5	21.0	20.8	20		
20-Sep	16.3	18.1	18.4	18.6	18.8	11.4	16.2	24.8	34.3	30.3	44.1	42.1	41.3	40.6	37.5	37.5	31.1	12.1	2.7	9.0	5.7	7.4	7.5	10.5	22	
21-Sep	10.1	0.3	3.0	7.0	3.7	12.9	18.1	21.9	25.3	24.3	26.0	22.8	24.1	25.7	25.8	25.7	22.8	23.0	22.7	9.4	8.9	11.7	11.1	20.2	17	
22-Sep	19.5	3.6	5.4	5.9	9.2	7.9	14.4	21.4	27.3	34.6	31.1	26.3	22.6	25.8	21.9	24.0	21.0	15.4	5.4	5.4	1.0	0.4	0.3	0.3	15	
23-Sep	3.5	0.8	0.5	0.5	2.1	11.6	13.2	27.2	33.0	30.4	35.3	40.7	36.7	30.1	30.3	29.4	21.7	11.0	1.2	1.1	0.9	7.7	6.0	6.9	16	
24-Sep	11.3	12.8	16.1	6.1	1.5	6.8	4.2	18.7	24.0	25.9	27.8	26.7	31.5	30.3	24.6	24.7	22.7	19.8	12.0	9.3	17.1	19.7	21.7	24.7	18	
25-Sep	22.7	18.6	24.1	30.1	21.5	23.3	31.1	33.3	35.9	28.9	30.0	29.8	23.8	26.7	26.6	23.7	21.7	21.4	18.4	29.6	39.4	30.3	20.5	20.4	26	
26-Sep	23.3	42.2	31.4	35.3	1.7	7.1	40.4	23.2	25.7	33.0	14.4	41.9	36.4	27.2	14.9	30.6	14.2	22.4	18.3	12.9	1.1	4.7	2.3	2.8	21	
27-Sep	29.7	10.8	12.0	6.2	26.6	25.9	2.5	14.3	28.1	22.6	36.4	33.2	28.1	29.5	31.2	17.6	24.0	22.8	22.3	20.4	28.3	22.9	13.9	1.2	21	
28-Sep	0.0	6.6	18.8	22.5	22.2	20.3	21.4	22.5	17.9	21.5	35.8	34.8	25.8	22.9	21.9	20.7	14.6	3.5	7.7	1.2	1.1	1.5	0.7	1.3	15	
29-Sep	4.8	3.2	2.1	4.6	1.8	3.5	7.9	10.5	19.4	28.6	27.8	29.1	23.8	46.0	32.5	27.8	19.7	7.1	1.9	2.1	11.1	9.6	17.5	16.9	15	
30-Sep	14.9	19.2	20.8	19.2	19.1	15.9	9.1	11.4	15.4	28.0	25.9	34.4	26.8	24.8	23.2	18.0	16.1	11.9	0.9	1.4	1.1	2.4	2.7	9.1	15	

	Total Hours In Month	720
	Valid Hours	720
	Percent Data Captured	100.0%

Meteorological Report
The Doe Run Company
Temperature

Site Name: Rivermines

Average Interval: 01 Hour

Units: Deg. C

Sampling Frequency: 01 Second

2012	Hour	24 Hour																										
		Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Max	Avg
1-Sep	24	24	24	24	24	24	24	25	25	24	24	25	27	28	29	29	27	26	24	23	23	23	23	23	23	29.4	24.8	
2-Sep	22	22	22	22	22	22	22	22	23	23	24	24	24	24	25	25	25	24	23	22	22	23	23	23	23	24.9	23.1	
3-Sep	23	23	23	23	23	23	23	23	24	26	26	26	27	28	28	28	28	28	25	23	22	22	21	21	21	28.5	24.5	
4-Sep	21	20	20	20	19	19	20	23	27	29	30	32	33	33	33	34	33	32	30	27	25	25	24	23	23	33.7	26.3	
5-Sep	23	22	23	23	23	23	23	25	26	28	28	27	28	28	29	30	31	31	30	27	25	24	23	22	22	30.9	25.8	
6-Sep	21	21	21	21	20	20	21	25	28	30	31	32	33	33	33	29	21	20	20	23	19	18	18	18	18	18	32.9	23.5
7-Sep	18	17	17	17	17	17	17	18	22	27	29	31	32	33	33	32	29	29	22	22	21	21	20	20	20	19	33.2	23.2
8-Sep	18	17	15	15	14	14	15	15	16	17	19	20	21	21	22	22	22	21	17	15	14	13	13	12	12	22.4	17.3	
9-Sep	12	12	11	11	11	11	11	13	17	18	19	21	22	23	23	23	23	22	19	16	14	13	12	11	11	23.3	16.6	
10-Sep	11	11	11	10	10	10	10	11	15	18	21	23	24	24	25	26	26	26	24	21	18	17	15	14	13	26.0	17.7	
11-Sep	12	12	11	11	11	11	10	12	16	22	24	25	26	27	28	28	28	28	26	23	19	18	17	16	14	28.0	19.3	
12-Sep	14	13	13	12	12	12	13	18	23	26	28	28	28	28	27	27	28	27	25	23	21	19	17	16	15	27.6	20.1	
13-Sep	17	15	15	14	14	14	14	15	18	23	25	26	27	28	28	27	24	22	22	21	20	19	18	16	16	27.8	20.2	
14-Sep	15	15	15	15	15	15	15	14	14	14	15	15	15	16	16	17	17	17	16	15	15	14	14	14	14	17.2	15.3	
15-Sep	14	13	13	13	13	13	12	13	15	17	18	19	18	18	17	17	16	16	16	16	16	16	16	15	15	18.5	15.5	
16-Sep	15	16	16	16	16	16	16	16	16	17	18	19	20	20	21	21	23	22	21	20	20	19	19	19	19	22.5	18.5	
17-Sep	18	19	18	18	18	18	18	18	19	21	21	21	23	23	24	25	24	23	22	20	19	18	18	18	17	24.7	20.2	
18-Sep	16	15	13	12	11	10	10	12	14	16	17	18	19	20	20	20	20	19	17	13	11	9	8	7	7	19.9	13.9	
19-Sep	7	7	6	6	5	5	6	10	17	19	20	21	22	23	24	23	22	21	19	18	18	18	17	17	17	23.6	15.5	
20-Sep	15	16	16	17	16	14	15	18	21	22	24	25	26	26	26	26	24	21	17	15	14	13	12	12	12	26.3	18.8	
21-Sep	12	12	11	11	11	12	16	16	18	21	24	25	26	27	27	27	27	25	23	20	18	16	15	14	14	27.3	19.0	
22-Sep	14	12	10	10	9	9	10	14	20	23	22	22	22	21	21	20	17	12	9	8	7	5	5	5	5	22.6	14.3	
23-Sep	4	4	3	2	2	2	4	8	12	14	15	17	17	18	18	18	18	18	16	11	9	7	7	6	6	18.2	9.9	
24-Sep	5	5	4	3	3	3	4	8	15	17	18	19	20	21	21	21	20	19	17	16	17	18	18	18	18	21.1	13.8	
25-Sep	18	19	19	20	20	20	21	21	23	28	30	31	31	32	31	30	29	27	26	24	22	22	23	31.7	24.5			
26-Sep	24	23	19	19	19	19	18	18	18	19	21	23	23	22	19	19	19	19	18	17	17	17	17	17	17	23.7	19.4	
27-Sep	16	16	16	16	16	16	16	16	18	19	20	22	22	22	23	23	22	22	21	20	20	19	19	19	18	22.7	19.1	
28-Sep	18	18	18	18	17	16	15	15	15	15	16	17	19	19	18	18	17	15	15	14	13	12	11	11	18.8	16.2		
29-Sep	11	10	10	9	8	8	8	12	15	18	20	21	22	22	22	22	21	19	15	13	12	11	11	11	22.4	14.6		
30-Sep	11	11	10	10	9	9	10	11	14	18	21	22	22	21	21	20	18	16	15	14	13	12	11	11	22.2	15.0		



Maximum Hour//Monthly Average

33.7

Total Hours In Month

720

Valid Hours

720

Percent Data Captured

100.0%

Meteorological Report
The Doe Run Company
Site Pressure

Site Name: Rivermines

Average Interval: 01 Hour

Units: mmHg

Sampling Frequency: 01 Second

2012	Hour	24 Hour																										
		Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Max	Avg
1-Sep	741	741	741	741	741	741	741	741	741	741	741	741	741	740	740	739	738	738	738	738	738	738	738	739	739	739	741	740
2-Sep	739	739	739	739	739	739	739	740	740	740	741	741	741	741	740	740	740	740	740	740	740	740	740	740	741	741	740	
3-Sep	741	740	740	740	740	741	741	742	742	742	742	742	742	742	741	741	741	741	741	741	741	742	742	742	742	741	741	
4-Sep	742	742	742	742	742	742	742	743	743	743	742	742	741	741	740	740	740	740	741	741	741	741	741	741	741	740	743	
5-Sep	740	740	740	740	740	740	740	740	740	740	740	741	741	741	741	740	740	740	740	740	740	740	741	741	741	741	740	
6-Sep	742	741	741	742	742	742	743	743	743	743	743	743	742	742	742	744	746	743	742	742	742	742	742	742	742	746	742	
7-Sep	742	741	741	741	741	741	741	741	741	741	741	740	740	739	739	738	737	737	737	739	739	739	741	741	742	742	740	
8-Sep	742	743	743	743	743	743	744	744	744	745	745	745	745	745	745	744	744	744	744	744	744	744	745	745	745	745	744	
9-Sep	744	744	744	744	744	744	745	745	745	746	746	746	746	746	746	746	746	746	747	747	748	748	748	748	748	748	746	
10-Sep	748	748	748	748	749	749	750	750	750	750	749	748	748	747	747	747	747	747	747	747	747	747	747	747	747	750	748	
11-Sep	747	747	747	748	748	749	749	749	749	749	749	748	748	747	747	747	746	746	747	747	747	747	747	747	749	748	748	
12-Sep	747	748	748	748	748	749	749	749	749	749	749	749	748	748	747	747	747	747	747	747	748	748	748	748	749	749	748	
13-Sep	749	749	749	749	749	749	749	750	749	750	750	749	749	749	748	748	748	748	748	749	750	750	751	751	751	751	749	
14-Sep	751	751	751	751	751	751	751	752	752	752	752	752	752	752	752	752	751	751	751	751	751	752	752	751	752	752	752	
15-Sep	751	751	751	751	751	751	751	752	752	751	751	751	750	750	749	749	749	749	748	748	748	748	748	748	748	752	750	
16-Sep	747	747	747	747	747	747	747	747	747	747	747	747	746	746	746	745	745	745	744	744	744	744	744	744	744	747	746	
17-Sep	744	743	743	743	742	742	743	742	742	742	742	742	741	740	740	739	739	739	739	739	740	740	740	741	744	741		
18-Sep	741	741	742	742	743	743	744	744	744	744	744	744	744	744	744	744	744	744	745	745	746	746	746	747	747	744	744	
19-Sep	747	747	747	747	748	748	748	748	748	748	748	747	747	746	745	745	744	744	744	744	744	744	744	744	744	748	746	
20-Sep	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	745	745	744	744	
21-Sep	745	745	744	744	744	744	744	744	743	743	742	741	740	739	739	738	738	738	739	739	740	741	741	742	742	745	741	
22-Sep	743	743	743	744	744	744	745	745	745	745	745	746	746	746	746	746	747	747	748	748	748	749	749	750	750	750	746	
23-Sep	750	751	751	751	752	752	752	752	752	752	752	752	751	751	750	750	750	750	751	751	751	751	751	751	751	752	751	
24-Sep	751	751	751	751	751	751	751	751	751	750	750	749	749	748	747	746	745	744	744	744	744	744	744	744	744	751	748	
25-Sep	743	743	742	741	742	742	743	743	743	742	742	741	741	741	740	740	740	740	742	742	743	743	743	743	743	742	742	
26-Sep	743	743	743	743	743	743	744	745	745	744	745	745	745	745	745	745	745	745	745	746	746	746	747	747	747	747	745	
27-Sep	747	747	747	747	747	747	747	747	748	747	748	748	748	747	747	747	747	747	747	747	747	747	747	747	747	748	747	
28-Sep	747	747	747	747	747	747	747	747	748	748	749	749	749	748	748	747	747	747	747	747	747	747	747	747	747	749	747	
29-Sep	747	747	747	747	747	747	748	748	748	747	747	747	747	746	746	745	745	745	745	745	745	745	745	745	745	748	746	
30-Sep	744	744	744	743	743	743	743	743	743	743	743	742	742	741	741	741	741	741	741	741	741	741	741	741	741	744	742	

 BARR	Maximum Hour//Monthly Average	752
	Total Hours in Month	720
	Valid Hours//Percent Data Captured	100.0%

Meteorological Report
The Doe Run Company
Precipitation

Site Name: Rivermines

Average Interval: 01 Hour
Sampling Frequency: 01 Second

2012	Hour	24 Hour																									
		Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Max
1-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.03	0.02	0.03	0.13
2-Sep	0.00	0.01	0.00	0.00	0.09	0.07	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.21
3-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07
6-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.51	0.19	0.04	0.00	0.00	0.00	0.00	0.00	0.51	0.96
7-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.19	0.02	0.90	0.11	0.00	0.01	0.00	0.00	0.90	1.36
8-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.03	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.08	0.12
14-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
15-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.04	0.03	0.01	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.15
16-Sep	0.00	0.00	0.01	0.00	0.00	0.00	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.07
17-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
18-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26-Sep	0.00	0.02	0.00	0.00	0.00	0.01	0.98	0.17	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.57	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.80
27-Sep	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
28-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Valid Hours//Percent Data Captured

100.0%

Maximum Hour//Monthly Total

4.92

Total Hours in Month

720

Valid Hours//Percent Data Captured

100.0%